THE REHABILITATION OF THE PERSON WITH CLEFT LIP AND CLEFT PALATE

Herbert Koepp Baker, Ph.D.

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I. DESCRIPTION OF THE DISABILITY AS IT IS MANIFESTED IN CHILDREN AND IN ADULTS

Congenital cleft palate and cleft lip appear as a complete or partial non-union of the palatal bones, the maxillae, the premaxillae, the covering soft tissue of the palatal vault, the muscles of the velum and uvula, the musculature of the upper lip with attendant displacement of the philtrum, columella, the nasal septum, the vomer bone, and the floor of the nose.

Involvement may vary from the simplest fissure of the uvula to a complete division of the structures anterior to it. However, the non-union may be confined to structures posterior to the foramen of Scarpa. This is termed incomplete cleft palate. If the division affects the premaxillae it usually follows both their lateral bony sutures or only one with a single or double cleft of the lip. This condition is usually described as complete unilateral or bilateral cleft palate and lip. Occasionally the lip is involved without a deformity of the hard or soft palates. Rarely, the osteal tissue of the horizontal plates of the palatal bones and the posterior parts of the maxillae are incomplete without disturbance of the muco-periosteum. This is accompanied by a forward displacement of the soft palate and inadequate function of the nasopharyngeal sphincter. It is diagnosed by palpation, transillumination and study of the speech. This condition is frequently confused with paresis of the velum and pharyngeal muscles, and is described as submucous cleft palate.

The cleft itself may be accompanied by a varying amount of absence of adjacent bony, muscular or connective tissue. The general effect of such non-union

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is a disturbed muscular continuity of the upper lip and its tegument, a communicating space between the nasal and oral cavities, and by division, a disruption of the muscular function of the velum and lateral walls of the oropharynx. Such a split also affects adversely the function of the superior segment of the superior pharyngeal constrictor. Cleft palate and cleft lip disturb the functions of sucking, mastication, deglutition, respiration, Eustachian ventilation, and of speech.

The speech disorder resulting from cleft palate and cleft lip is characterized by disturbances of many of the speech sounds, serious hypernasality of the voice, and the substitution of laryngeal and pharyngeal sounds for speech sounds ordinarily produced in the mouth. There is generalized emission of air through the nose during speech.

Hearing loss is a commonly associated disturbance with cleft palate due to the interference with Eustachian physiology and subsequent middle ear infection. Such hearing deficit imposes further handicaps upon speech since speech reception and speech discrimination is limited.

Cleft palate and cleft lip as seen in the adolescent and the adult are frequently modified by early surgical and orthodontic intervention. Such treatment may have wholly or only partially succeeded in reorganizing the disturbed tissue. The speech symptoms may also have been partially modified by re-education.

II. THE GENERAL EFFECT OF THE DISABILITY ON THE PERSON'S SOCIAL, EDUCATIONAL AND VOCATIONAL ADJUSTMENT

Because of the interference with biological processes produced by cleft palate and cleft lip, the general physical development of the patient may be decelerated. The condition makes him vulnerable to upper respiratory infection and otopathology. Injudicious or improper surgical and dental treatment may produce secondary deformities that result in arrested development of the head,

face and mouth, dental malocclusion, and make the speech disorder more resistant to treatment.

The speech and hearing disabilities associated with cleft palate and cleft lip frequently operate as deterrents to school progress, induce extended personality changes in the patient, and interfere with satisfactory social and vocational adjustment. The cosmetic defects of the nose and lip may also reinforce and encourage inappropriate personality development unless the speech of these patients can be improved to the point of acceptability, many vocations remain closed to them, and their social relationships are affected adversely.

III. THE PRESENT KNOWLEDGES REGARDING ETIOLOGY OF THE DISORDER

The cause of cleft palate and cleft lip is not now known. Genetic and clinical research and observation supports the suspicion that more than one factor may be etiologic, operating singly or as a constellation. Attention has been directed to genetic factors, dietary conditions in the mother, the RH factor, pelvic radiation during pregnancy, febrile diseases during early pregnancy, atypical fetal position, and cosmic factors. The direct or positive influence of any one, or any combination, has not been substantiated. Cleft palate and cleft lip are occasionally accompanied by structural deformities of other parts of the body involving the skeletal system, the circulatory and lymphatic systems, the nervous systems, and the alimentary canal.

Most recent statistics indicate that the condition occurs with the frequency of one in every eight hundred live births. In complete clefts, the left side of the lip is more frequently involved than the right, and most surveys reveal that males are affected with greater frequency than females.

IV. PRESENT METHODS IN THE EXAMINATION AND DIAGNOSIS OF THE DISABILITY

With the exception of submucous cleft palate, the condition presents few

problems of diagnosis. Direct visual and digital examination of the lip, the nasal, oral and pharyngeal spaces and structures, together with a careful phonetic study, provide adequate facts for differential diagnosis of the deformity. Complete otological and audiological examinations are also imperative. Thorough orthodontic examination adds indispensible information for treatment planning. A general pediatric examination is usually indicated.

V. PRESENT METHODS OF TREATMENT OF THE PERSON WITH THE DISABILITY

Satisfactory rehabilitation of the patient with cleft palate and cleft lip can be achieved only by a carefully integrated and coordinated therapeutic relationship of the plastic surgeon, the pediatrician, the general dentist, the orthodontist, and prosthodontist, the speech therapist, the otolaryngologist, the psychologist, the medical-social worker, and the educator. Under ideal circumstances, the patient should be examined by this team of specialists concurrently, and a comprehensive and detailed treatment plan determined upon by joint consultation. Since adequate rehabilitation is a long-term process, often extending through adolescence into adulthood, specific and definite assignment of responsibility of treatment coordination and implementation is essential.

In cases of cleft lip, whether or not complicated by cleft palate, the character and time of surgical intervention should result from joint decision between the plastic surgeon and the pediatrician. When the infant is a good surgical risk and all collateral physical factors have been evaluated, a good functional and cosmetic result can be achieved by closure of the lip during the first year. Some operators prefer to make primary lip closures in the first three to six months; others postpone the initial step. In some hands, very satisfactory lip closures are accomplished after the first year, but since it is often thought to be important to establish muscular function in the patient's lip to reduce feeding

difficulties, many surgeons intervene somewhat earlier. Reasonably early restoration of the lip aids greatly in encouraging proper growth and conformation of the maxillary arch and approximation of the divided alveolar border. The experience of modern surgeons has established the dictum that lip operations should produce the least possible amount of surgical trauma.

It is generally thought to be good surgical practice to be concerned mainly with the reestablishment of muscular function in the lip in primary lip surgery, and a willingness to postpone secondary cosmetic repair until later childhood or adolescence. In order to encourage satisfactory growth of the nose and surrounding structures, as well as of the lip itself, some conscientious surgeons frequently perform closures of bilateral clefts of the lip in two stages. It is conceded that in bilateral clefts, surgical damage is controlled best by conservative and limited manipulation of the premaxillary bones and their support.

By his insistance on strictly limiting the amount of interference with growth and development of structure, the orthodontist has brought about shift away from employing sutures through the alveolar border to control the divided maxillae in bilateral and unilateral clefts of the palates. Many surgeons, achieving the best results, depend wholly upon the united lip to guide the growth and approximation of the alveolar border.

In line with this trend in cleft palate surgery is the practice of many more operators to postpone surgery to close the palatal vault until past the third year. Recent studies in the head development of normal children, and of those having palatal and lip defects, strongly support the view that if these structures are not interfered with surgically, or if so, in a very conservative and limited way, the general growth of the mouth and head follows much more of a normal pattern. With this evidence at hand, many hold that much of what has been called "the

deformity of the cleft palate" is the result of too extensive and too frequent surgical manipulation of tissue. When, as it often properly should be, surgery of the palate is delayed at least until deciduous teeth have erupted, or better, until the eruption of the sixth year molar is complete, the prosthodontist can design a light acrylic palatal appliance to be anchored to the teeth by orthodontic bands. Such an appliance protects the nose and encourages much more normal speech development. Since surgery is irreversible, the prosthodontist reasons that such temporary procedure allows him the privilege of participating in the treatment planning consultation, bringing the knowledge and experience of this specialty to bear upon the rehabilitation program not after, but before and during its course. The final decision as to whether surgery or prosthesis is the procedure of choice in the solution of the problems presented by a cleft of the palates is a critical one. The dramatic improvement of speech in children and adults who are fitted with properly designed and carefully constructed speech aids underscores the error of conceiving of surgery as an exclusive method of treatment of palatal clefts. The assumption that it is better to select surgery regardless of its chances of success, because cleft palate patients prefer not to wear a prosthetic speech aid, has been demonstrated by clinical experience to be fallacious. Until surgery is able to assure more consistent and successful restitution of the speech function, it is poor rehabilitation practice not to consider prosthesis as an equivalently satisfactory mode of treatment. Where the palatal tissue is scant in amount, poorly nourished, and where other general constitutional or circumstantial factors militate against a reasonably hopeful prognosis of speech recovery, prosthesis clearly recommends itself as a treatment procedure. In many cases the combination of surgery for the hard palate and prosthesis for the soft is an ideal solution for the problems of gaining a functional recovery. Un-

successful surgery of the soft palate unfortunately precludes satisfactory prosthetic treatment because of the tightness and irresiliency of such operated vela. Some surgeons are now reopening such tight, foreshortened vela and referring the patient to a prosthetist experienced in this area.

If the surgeon is capable, earnest and imaginative, he can frequently choose among several procedures to close cleft palates successfully. A variety of relaxation and mesial displacement operations for closing the cleft in the hard and soft palates, with or without retropositioning of the total palatal covering, have been devised and used with success by competent and experienced surgeons. In such operations, singly or in combination, the greatest danger is the extensive cicatrization that so frequently follows and which interferes with the use of the structures in speech. A thorough and detailed study of the patient, by the several specialists concerned, before a decision is reached will reduce greatly the large number of unsuccessful surgical rehabilitations of cleft palate patients seen in any large clinic.

The very close relationship between good orthodontic care and that of the surgeon and the speech therapist is apparent. The success of orthodontic procedures is sharply conditioned by the character and timing of the surgery projected. The reciprocal effect of oral orthopedics and surgery is an important consideration in planning the treatment of cleft palate and cleft lip patients.

In the past, great emphasis was placed upon management of the air stream in speech training of cleft palate patients. To this end much speech therapy was directed toward establishing proper vilopharyngeal closure by blowing exercises. Improved understanding of the physiology of speech and of physiological acoustics suggests that such emphasis is misplaced. Therapy purposing to revise the patient's improper tongue habits during speech, and exercises designed to teach

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proper use of the oral and pharyngeal resonators produce more satisfactory clinical speech results. The revision of the patient's attitudes toward speech and toward himself, and towards the speaking situation, is also urgently necessary for satisfactory rehabilitation. Such mental hygiene assistance must accompany the training designed to reorganize the patient's neuro-motor sets and habits. Speech therapy for cleft palate patients requires the participation of specially trained and experienced clinicians, possessing full comprehension of the many collateral problems.

In children much of the improvement can be stabilized by proper educational guidance, in which the general classroom teacher must participate. With reasonably adequate speech and mental hygiene, the cleft palate person presents no special problems in vocational guidance. If, however, his speech is less than adequate, he must be directed into vocations which do not place an unusually high premium on speech skills and attractive voice.

VI. AGENCIES AND RESOURCES THAT MUST BE ENLISTED IN THE MANAGEMENT OF THESE DISORDERS.

The usual public and private agencies interested in the care of crippled and handicapped children and adults should be enlisted in providing care of the variety of specialistic services. State crippled children's services and divisions, vocational rehabilitation agencies, and state and regional and national crippled children's societies are able to contribute substantially in organizing teams of specialists to deal effectively with the problems of these patients. However, the task of satisfactory coordination is more difficult and must usually be accomplished by assignment of initative and responsibility to one person or one agency, with others contributing in whatever way possible.